CHAPTER 14C

MATERIAL HANDLING SYSTEM

14C-01 GENERAL

a. Coordination of the Work

(1) This chapter covers the installation and testing of freight handling equipment, prefabricated chutes, conveyors, gravity rollers, power belts, and other devices for transfer of bulk or package materials. System includes associated components, hardware, control, and safety equipment.

(2) The installation of a material handling system requires close coordination between structural, mechanical, and electrical work. The CQC representative must insure that the material handling equipment is designed to fit into the space available; that it is delivered in time so as not to hold up the construction work, and that the necessary walls, columns, or roof areas are left open to allow entry into the structure of the material handling equipment.

(3) Shop drawing reviews must include determination if space is available for future maintenance, operation, and subsequent replacement of worn equipment. Location of anchor bolts, and connections for utilities must be checked and assured prior to placement.

(4) Seismic considerations required by the design and the seismic zone must be incorporated into the work. Carefully check contract requirements and shop drawings for the requirement for seismic bracing, supports, snubbers, and springs.

b. Verification of Dimensions

(1) Verify opening sizes and locations, anchor bolt size and location, foundation pads, equipment isolation and vibration elimination means. Check shop drawing requirements against contract drawings. Advise your supervisor if errors are detected.

(2) Verify structural clearances such as overhead beams and girders, clear span between columns, and wall spacing.

(3) Coordinate electrical and mechanical work to insure needed equipment clearances.

(4) Some automated material handling equipment will require close tolerance of concrete floors, so that the equipment can service the storage bins without tilting or leaning of the automated material handling equipment.

14C-02 Materials

a. Submittals

(1) Shop drawings shall consist of a complete list of equipment and materials, including manufacturer*s descriptive and technical literature, performance charts and curves, catalog cuts, and installation instructions. Shop drawings shall also contain complete structural, electrical, and mechanical layouts,

schematic diagrams, and coordination details for installation of the components and system.

(2) Spare parts data shall be furnished for each different item of material and equipment specified.

(3) Systems operating and maintenance manuals and instructions will be provided.

(4) Performance test reports will be submitted, upon completion and testing of the installed system, in booklet form, to prove compliance with the specified performance criteria.

b. Manufacturer*s representative

Check requirements for manufacturer*s representative to supervise installation, adjusting, and testing of the material handling system.

c. Delivery and Storage

Equipment, plates, and units when delivered will be stored with protection from the weather, humidity, temperature variations, dirt, dust, or other contaminants. Deliveries should be scheduled to minimize job site storage whenever possible.

14C-03 Erection and Testing

a. Erection

(1) Check TM 5-809-10 to determine seismic considerations for your construction site, Tell your supervisor if required reinforcing or restraints are not provided for in the contract for the structure and the material handling system.

(2) Check shop drawings and contract drawings to insure proper orientation of the equipment and utilities servicing the equipment.

(3) Check anchor bolt layout, foundations, vibration eliminator and restraints.

(4) Install equipment in accordance with installation sequence shown in shop drawings and contract drawings.

(5) Compare the name plate capacity of the equipment with the specified equipment capacity. Inform your supervisor if variation in capacity is found.

(6) Insure that erection procedures for material handling equipment will not cause internal stresses, forced or improvised fits, misalignment, or damage to either the building or the equipment.

(7) After equipment is erected any damaged paint surfaces shall be cleaned and repainted.

(8) All motors, couplings, brakes, gear boxes, and drive components shall be aligned when installed at the site, in accordance with the manufacturer*s tolerances, for mechanical alignment.

(9) The material handling system shall be electrically aligned in accordance with the manufacturer*s instructions. Alignment data shall include all timer settings, test point voltages, supply voltages, motor voltages, motor currents, and test conditions such as ambient temperature, motor load, date performed, and person performing the alignment. Obtain a copy of the final alignment data.

b. Testing

(l) Check ease of operating equipment.

(2) Determine that all the various speeds can be obtained.

(3) Check if all safety devices have been furnished, installed, and are operating properly.

(4) See that specified tests are performed and recorded.

(5) The contractor shall provide all personnel necessary to conduct the tests. Tests will be held in the presence of the Government representative.

(6) Test data shall be recorded and evaluated by manufacturer*s representative. Verification will be given that units are installed and operate in the manner designed. Obtain copies of all test reports and data.

(7) Recorded values shall be compared with design specification or manufacturer*s recommended values. Inform your supervisor any improper values obtained during testing.

(8) During operating and load tests check for improper operation or poor condition of safety devices, electrical components, mechanical equipment, and structural assemblies. Report all defects to test supervisor immediately.

(9) Check specifications for specific tests to be conducted.